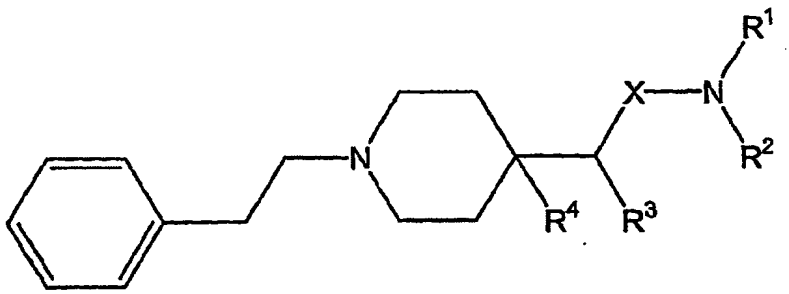
Claims:

1. Substituted 1-phenethylpiperidine compounds of the general formula I



I,

in which

X denotes a methylene (CH_2) or carbonyl (C=O) group,

R^1 denotes an optionally at least mono-substituted aryl or heteroaryl residue,

R^2 denotes H, COR^5, SO_2R^5, an optionally at least mono-substituted, saturated, branched or unbranched aliphatic C_{1-10} residue, an optionally at least mono-substituted, at least mono-unsaturated, branched or unbranched aliphatic C_{2-10} residue, an optionally at least mono-substituted, saturated or at least mono-unsaturated cycloaliphatic C_{3-8} residue, an optionally at least mono-substituted aryl or heteroaryl residue or an optionally at least mono-substituted aryl or heteroaryl residue attached via a C_{1-3} alkylene group,

R^3 and R^4 each separately denote H or together denote a bond,

R^5 denotes an optionally at least mono-substituted, saturated, branched or unbranched aliphatic C_{1-10} residue, an optionally at least mono-substituted, at least mono-unsaturated, branched or unbranched aliphatic C_{2-10} residue, an optionally at least mono-substituted, saturated or at least mono-unsaturated cycloaliphatic C_{3-8} residue, an optionally at least mono-substituted aryl or heteroaryl residue or an optionally at least mono-substituted aryl or heteroaryl residue attached via a C_{1-3} alkylene group,

as a free base or a corresponding physiologically acceptable salt and corresponding racemates, enantiomers and diastereomers.

2. Substituted 1-phenethylpiperidine compounds according to claim 1, characterised in that X denotes a methylene (CH_2) group.

3. Substituted 1-phenethylpiperidine compounds according to claim 1 or 2, characterised in that R^1 denotes an optionally at least mono-substituted aryl residue.

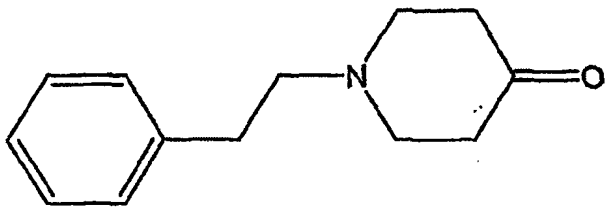
4. Substituted 1-phenethylpiperidine compounds according to one of claims 1 to 3, characterised in that R^2 denotes H, COR^5, SO_2R^5 or denotes a C_{1-6} alkyl residue, preferably denotes H or COR^5.

5. Substituted 1-phenethylpiperidine compounds according to one of claims 1 to 4, characterised in that the residues R^3 and R^4 each denote H.

6. Substituted 1-phenethylpiperidine compounds according to one of claims 1 to 5, characterised in that the residue R^5 denotes a C_{1-6} alkyl residue or denotes an unsubstituted or at least mono-substituted aryl residue.

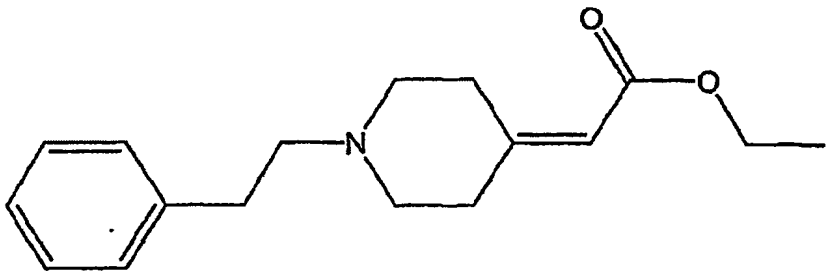
8. A process for the production of substituted 1-phenethylpiperidine compounds of the general formula I according to one of claims 1 to 7, characterised in that

(a) 1-phenethylpiperidin-4-one of the formula II



II

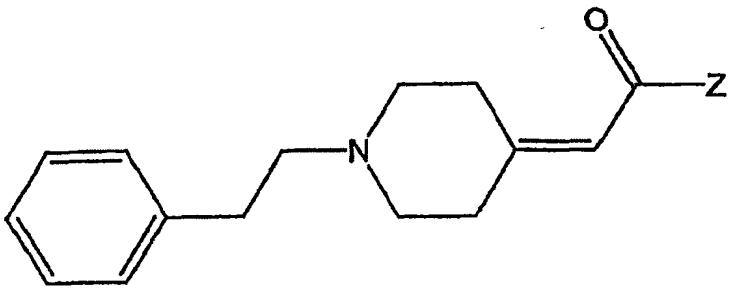
is reacted with triethyl phosphonoacetate in solution to yield (1-phenethylpiperidin-4-ylidene)-ethyl acetate of the formula III



III

and this is optionally purified in accordance with conventional methods and/or optionally isolated in accordance with conventional methods,

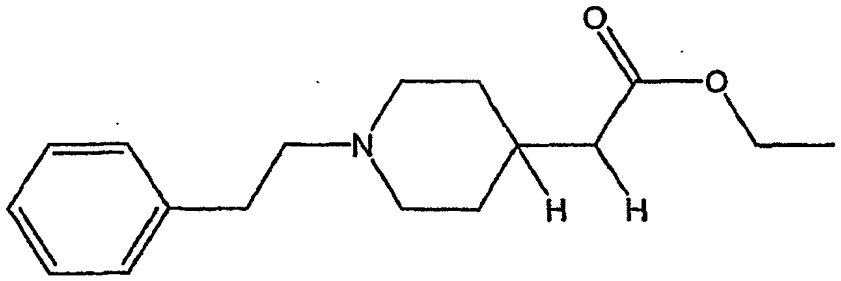
(b) optionally the (1-phenethylpiperidin-4-ylidene)-ethyl acetate of the formula III is converted in accordance with conventional methods into a compound of the general formula IV,



IV

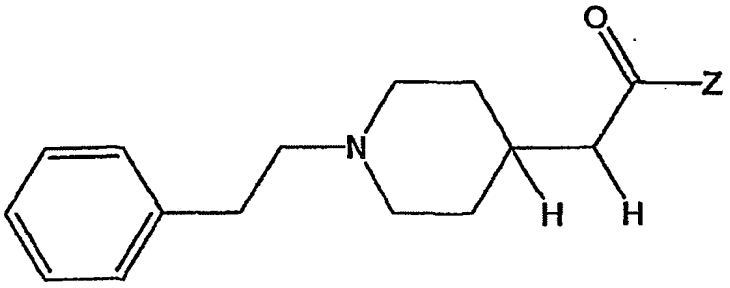
in which Z denotes a group which activates the carbonyl carbon atom for reaction with an amine, the compound of the general formula IV thus obtained is optionally purified in accordance with conventional methods and/or optionally isolated in accordance with conventional methods,

(c) optionally at least one of the compounds of the formula III or IV in solution is reduced to yield a corresponding compound of the general formula III'



III'

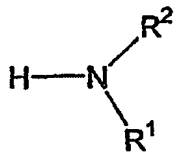
or to yield a corresponding compound of the general formula IV'



IV'

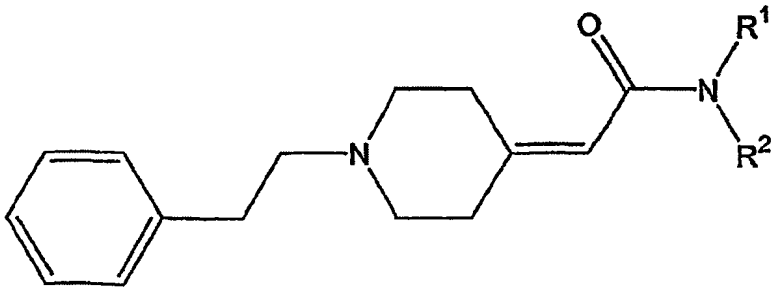
and the corresponding compound is optionally purified in each case in accordance with conventional methods and/or optionally isolated in each case in accordance with conventional methods,

(d) at least one compound of the formula III, III', IV and IV' in solution is reacted with a primary or secondary amine of the general formula V,



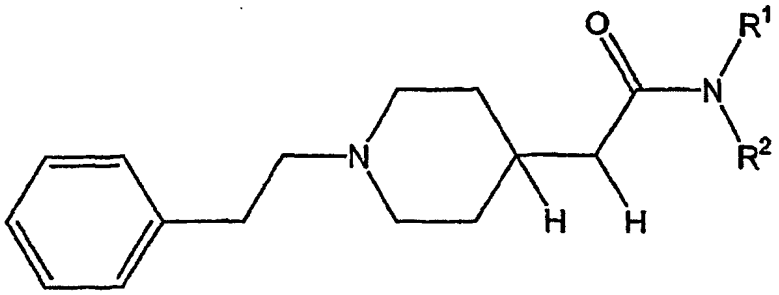
V

in which R^1 and R^2 have the meaning according to the above-stated general formula I, to yield at least one compound of the general formula Id



Id

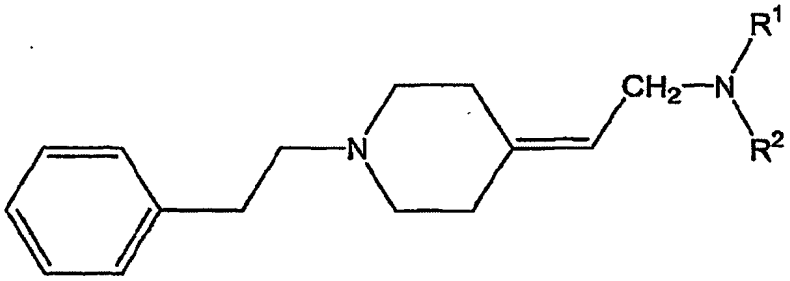
and/or at least one compound of the general formula Id'



Id'

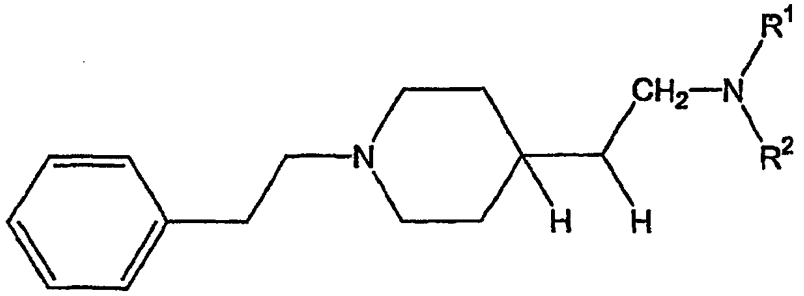
and this is optionally purified in each case in accordance with conventional methods and/or optionally isolated in each case in accordance with conventional methods,

(e) optionally at least one of the compounds of the general formula Id and/or Id' is converted by reduction in solution into at least one compound of the general formula Ie



Ie

and/or at least one compound of the general formula Ie'



Ie'

in which R^1 and R^2 each have the meaning according to claim 1, and this is optionally purified in each case in accordance with conventional methods and/or optionally isolated in each case in accordance with conventional methods,

(f) optionally at least one compound of the general formula Ie and/or Ie', in which the residue R^2 denotes H, is converted in accordance with conventional methods known to the person skilled in the art into at least one compound of the general formula Ie and/or Ie', in which the residue R^2 denotes COR^5, SO_2R^5, an optionally at least mono-substituted, saturated, branched or unbranched aliphatic C_{1-10} residue, an optionally at least mono-substituted, at least mono-unsaturated, branched or unbranched aliphatic C_{2-10} residue, an optionally at least mono-substituted, saturated or at least mono-unsaturated cycloaliphatic C_{3-8} residue, an optionally at least mono-substituted aryl or heteroaryl residue or denotes an optionally at least mono-substituted aryl or heteroaryl residue attached via a C_{1-3} alkylene group, wherein the residue R^5 has the above-stated meaning and this is optionally purified in accordance with conventional methods

and/or optionally isolated in accordance with conventional methods.

9. A process according to claim 8, characterised in that Z denotes OH, Cl or a succinimide residue.

10. A process according to claim 8 or 9, characterised in that the reduction to yield the compounds of formula III' or IV' is performed with hydrogen in the presence of a transition metal catalyst, preferably in the presence of palladium powder.

11. A process according to one of claims 8 to 10, characterised in that the reaction with a primary or secondary amine of the general formula V is performed in the presence of n-butyllithium.

12. A process according to one of claims 8 to 11, characterised in that reduction to yield a compound of the general formula Ie or Ie' proceeds with aluminium hydride (alane) produced in situ from lithium aluminium hydride and aluminium trichloride in an organic solvent.

13. A pharmaceutical preparation containing at least one substituted 1-phenethylpiperidine compound according to one of claims 1 to 7 and optionally physiologically acceptable auxiliary substances.

14. A pharmaceutical preparation according to claim 13 for combatting pain.

15. A pharmaceutical preparation according to claim 13 for the treatment of migraine.

16. A pharmaceutical preparation according to claim 13 for the treatment of diarrhoea.

17. A pharmaceutical preparation according to claim 13 for the treatment of urinary incontinence.

18. A pharmaceutical preparation according to claim 13 for the treatment of pruritus.

19. A pharmaceutical preparation according to claim 13 for the treatment of inflammatory reactions.

20. A pharmaceutical preparation according to claim 13 for the treatment of allergic reactions.

21. A pharmaceutical preparation according to claim 13 for the treatment of the abuse of alcohol and/or drugs and/or medicines.

22. A pharmaceutical preparation according to claim 13 for the treatment of dependency on alcohol and/or drugs and/or medicines.

23. A pharmaceutical preparation according to claim 13 for the treatment of inflammation.

24. A pharmaceutical preparation according to claim 13 for local anaesthesia.

25. Use of at least one substituted 1-phenethylpiperidine compound according to one of claims 1 to 7 to produce a pharmaceutical preparation for the combatting of pain, for the treatment of migraine, diarrhoea, urinary incontinence, pruritus, inflammatory reactions, allergic reactions, dependency on alcohol and/or drugs and/or medicines, abuse of alcohol and/or drugs and/or medicines, inflammation or for local anaesthesia.